BOOK REVIEW

GROUP THEORY AND ITS APPLICATIONS TO PHYSICAL PROBLEMS—By Morton Hamermesh. Pp. 509+xi. Pergamon Press, Oxford, London, New York. 1962. Price £5. 5s. net.

This book has been written with the main object of making the application of abstract group theory to physical problems understandable to physicists. As mentioned by the author in the Preface no previous knowledge of group theory is needed, but the reader should know quantum mechanics.

In the first chapter the elements of the group theory have been discussed with the help of suitable examples. The symmetry groups and their properties have been described in detail in Chapter 2. The third chapter deals with group representations. The methods of finding the irreducible representation of abelian and non-abelian groups are discussed in Chapter 4 and character tables of crystal pointgroups are given in this chapter. Miscellaneous operations with group representations, such as obtaining Kronecker products, complex conjugate representation, real representation, etc. are discussed in Chapter 5.

Taking the case of an atomic system, the application of properties of group representations to solution of physical problems has been discussed in Chapter 6. The properties of symmetry group and different methods for finding the characters of such groups are discussed in great detail in Chapter 7. The next chapter deals with properties of continuous groups and includes discussions on Lie groups, one-parameter groups, Lie algebras, etc. Chapter 9 deals with properties of groups having axial and spherical symmetry. As examples of applications of the properties of such groups the problems of splitting of atomic energy levels in crystalline fields have been discussed in detail Chapter 10 deals with linear groups in n-dimerosional space and methods of constructing irrudicible representations of general linear group and its sub-groups, and of orthogonal groups. Applications of the properties of such groups to problems in atomic and nuclear physics have been illustrated in Chapter 11. The last chapter deals with the properties of ray representations and little groups. Finally, the author has given a bibliography and notes including the references of all the journals and books from which the deductions given in the book have been taken. This will be extremely useful to readers who are interested in studying the subject exhaustively.

The book appears to be a valuable text book for students or research workers who are interested in applying the methods of group theory to physical problems. The get-up is excellent.

S. C. S.

BOOK REVIEW

PULSE CIRCUITS—by B. Chatterjee : Pp 159. Asia Publishing House, 1963. Price Rs. 10.00.

This is a small book presumably meant for advance students of communication engineering specialising in Television and Radio Aids to Navigation. The subject matter is divided into eleven chapters. Two appendices on Laplace Transform cover about one-fifth of the book. The author claims that unnecessary details have been avoided as far as possible and stress has been given only on the fundamental principles.

Chapter one deals with Introduction of Pulse characteristics. To the reviewer it seems better to delete "Introduction of". Chapter two is devoted to pulse-shaping circuits. Chapter three is on delay lines. Chapter four discusses pulse-amplifiers. Chapter five describes the blocking oscillator. Chapter six deals with trigger circuits. Chapter seven describes counter circuits. Chapter eight deals with multivibrators and chapter nine with sweep circuits. Chapter ten is devoted to radar indicators. Chapter eleven discusses pulse measurements and wave-form synthesis.

As expressed by the author in the preface, the book is aimed at discussing the basic principles of ordinary pulse circuits. The reviewer feels that this book is a sketchy outline and many important aspects of the subject are dismissed with the briefest mention. The book is written in a manner similar to the concise note, a lecturer prepares and the remaining gaps are filled up by him in accordance with the needs of his students in the class room As this book is meant for advanced students it would be a great mistake to mask what is really needed in an attempt to be brief.

It is unfortunate that so many printing and other errors have passed unnoticed. Meanings of the symbols used in some formulae are not given. There are some loose statements like "nonsinusoidal waveforms like rectangular, sawtooth, triangular etc. are known as pulses", "Pulse amplifiers are used in their linear ranges of operations". A diagram on ringing circuits is a conspicuous ommission. The book needs a thorough and careful revision. The reviewer would welcome in a new edition a fuller treatment of the chapters with greater care in defining terms more clearly and precisely so that students may not have to consult other books for proper understanding of the topics dealt with in the book itself.

A. K. S.